

Geometry      Date\_\_\_\_\_      5.4 Assignment  
Midsegment Theorem (pp 287-289)

1. What is your name?

Use the diagram of  $\triangle ABC$  where  $D$ ,  $E$ , and  $F$  are the midpoints of the sides.



2. Name the segment parallel to  $\overline{DE}$ .

3. Name the segment parallel to  $\overline{FE}$ .

4. If  $AB = 21$ , what is  $EF$ ?

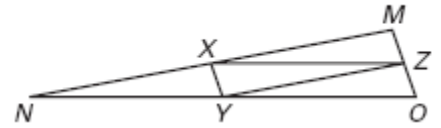
5. If  $BE = 7$ , what is  $DF$ ?

6. If  $DE = 10.2$ , what is  $AC$ ?



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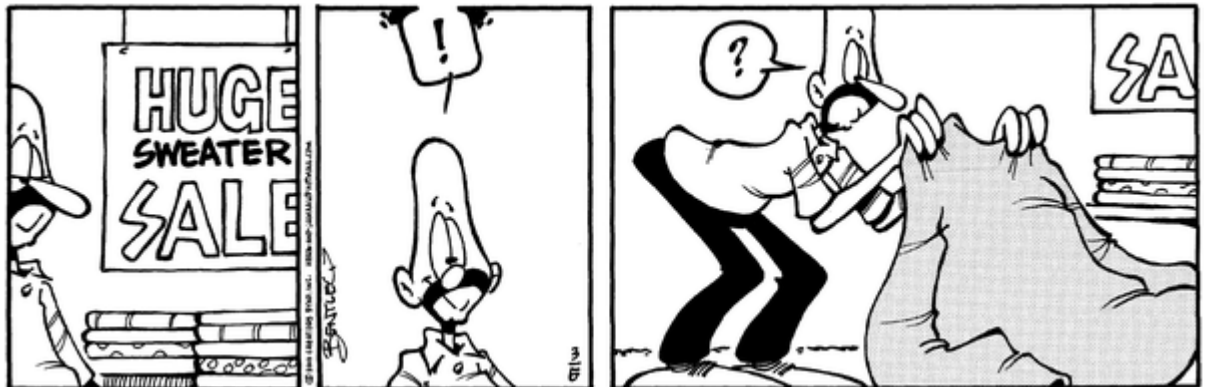
Use the diagram of  $\triangle MNO$  where  $X$ ,  $Y$ , and  $Z$  are the midpoints of the sides.



7. If  $YZ = 2x + 3$  &  $MN = 5x - 14$ , what is the length of  $YZ$ ?

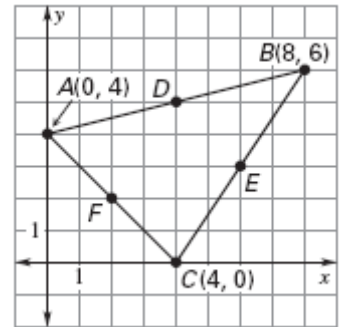
8. If  $YX = 3x - 4$  &  $MO = 9x - 20$ , what is  $MO$ ?

9. What triangles appear to be congruent to  $\triangle XYN$ ?



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10. Find the coordinates of the endpoints of each midsegment.



11. Use the slope and distance formula to verify that the Midsegment Theorem is true for  $\overline{DF}$ .

You are given the midpoints of the sides of a triangle. Find the coordinates of the vertices of the triangle.

12. L(4, 3), M(7, 4) & N(5, 2)

13. L(7, 1), M (9, 6), & N(5, 4)

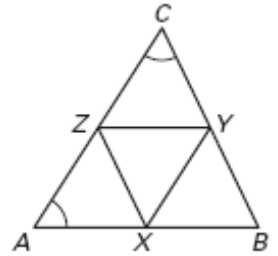
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14. Fill in the blanks of the paragraph proof.

$\angle A \cong \angle C$   
**Given:** X, Y, & Z are the midpoints of  $\triangle ABC$ .

**Prove:**  $\triangle XYZ \cong \triangle XYB$

Given that  $\angle A \cong \angle C$ , you know that  $\overline{BC} \cong \overline{AB}$  because \_\_\_\_\_.



Since X, Y, and Z are midpoints, you know that

$XY = \frac{1}{2}$  \_\_\_\_\_, &  $XZ = \frac{1}{2}$  \_\_\_\_\_, by \_\_\_\_\_. Since  $BC =$

$AB$  it follows that  $ZY =$  \_\_\_\_\_ and  $XZ =$  \_\_\_\_\_ by substitution. By the

reflexive property of congruence \_\_\_\_\_  $\cong$  \_\_\_\_\_. Therefore

$\triangle XYZ \cong \triangle XYB$  by \_\_\_\_\_.

**Review.**

**Solve the equation and state a reason for each step.** (Chapter 2 Section 4).

15.  $3x + 13 = 46$

16.  $5x + 12 = 9x - 14$

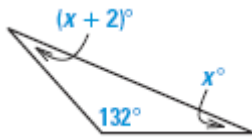
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17.  $9(3x + 10) = 27$

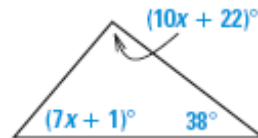
18.  $3x + 2(x + 5) = 40$

Find the value of  $x$ . (*Chapter 4 Section 1*)

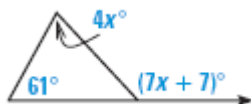
19.



20.



21.



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$\overline{AD}$ ,  $\overline{BD}$ , &  $\overline{CD}$  are angle bisectors of  $\triangle ABC$ .

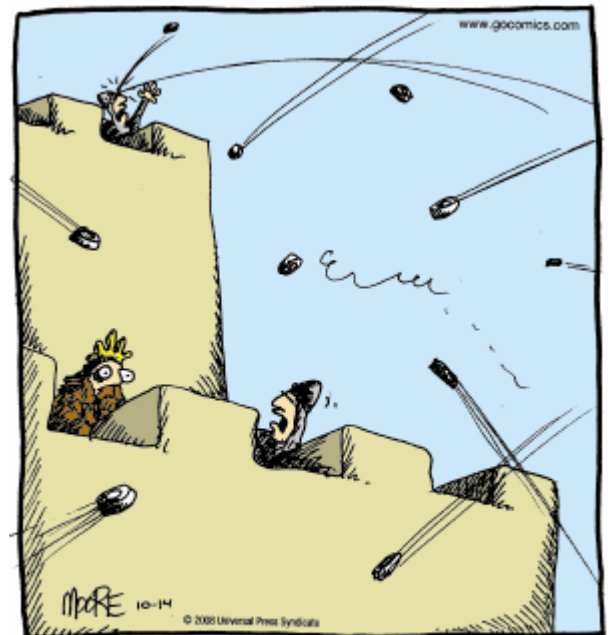
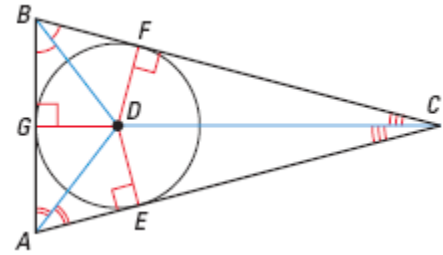
22. Explain why  $\angle CAD \cong \angle BAD$  &  $\angle BCD \cong \angle ACD$ .

23. \_\_\_\_\_ What name is given to the point of concurrency, D?

- A. Incenter
- B. Circumcenter

24. Explain why  $\overline{DE} \cong \overline{DG} \cong \overline{DF}$ .

25. Suppose  $CD = 10$  and  $EC = 8$ . Find  $DF$ .



"It started as just a skirmish, your majesty,  
and suddenly escalated into a hockey game!"